THE CHRONICLE
of Early American Industries

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The Founder of the Paper Industry in North America

by HARRISON ELLIOTT

Papermaking did not have its beginning in this country until about fifty years after the first printing press was set up here. It was easier to import a printing press than to build and equip a paper mill with the little materials then available. Much of the paper during the first half century of printing came from England, then as today, England had an eye to her exports.

In 1690 William Rittenhouse, with the help of three partners, set up the first paper mill in British North America in Germantown, Pennsylvania. Rittenhouse was the prime mover in the venture, and it was he who furnished the necessary skill and knowledge to erect, equip and operate the paper mill. William Rittenhouse was born in Prussia in 1644 and died in Germantown in 1708. He took to papermaking naturally by reason of hereditary skill. He pursued his vocation for a time in Amsterdam, Holland, but later returned to Arnheim on the Rhine, where other members of the family had been engaged in papermaking for years.

He prospered as a papermaker there, but became dissatisfied with civic and social conditions in Germany and, having decided religious views, became a follower of the doctrines of the great reformer, Menno Simons, founder of the Mennonite church. The creed of that church then demanded absolute freedom of conscience in religious belief, abolishment of human slavery, prohibition of all war, and the fostering of peace and good will among men.

In the year 1688 Rittenhouse disposed of all his property and departed for America with his family, consisting of his wife, two sons and a daughter. They arrived in New York but stayed there for a short time only, no doubt due to the influence of William Bradford, Pennsylvania's first printer, who felt the need of a papermaker in the Colonies. The appeal of William

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The Manufacture of Printer's Type in America

by GLOVER A. SNOW

(continued from the last issue)

Two Connecticut Yankees, Elihu White and William Wing, in 1794 had tried to improve on the old method of type making, which was a slow business, but tackled it the hard way, apparently without too much knowledge of the tools in use at that time. Ringwalt's Encyclopedia of Printing gives a detailed story of their troubles too long to recite here, including very, very deep intrigue. To boil it down, Messrs. White and Wing, of Hartford wanted to know more about the art of type casting as it was practiced by Binny & Ronaldson, having failed to get anywhere with an idea for casting a number of different characters at one time, which they patented in 1805.

A scheme was concocted whereby an employee of theirs, Edwin Starr, applied for work with Binny & Ronaldson, claiming he couldn't get along with his former employers. To make the plan doubly sure of clicking, White wrote Binny & Ronaldson complaining about Starr and his intentions, requesting that B & R not hire him.

That was all Binny & Ronaldson wanted. They hired Starr, thinking they would find out how far the Connecticut men had gotten with their ideas. Starr stayed long enough to find out what he needed to know, then returned to his former employers, who eventually moved to New York. Starr later went into business for himself, but sold out to another type founder when the going seemed too hard. White and Wing continued as founders, but the projected improvement seemed to have been sidetracked for awhile.

In the meantime, various men were working independently on ways of speeding the casting of type. Production of 2000 to 4000 pieces was the usual stint of a man with a hand mould in the long working day, then observed. A spring lever, attached to the mould, giving it a quick return movement, was devised by Binny in 1811, which it was claimed, doubled former output. Elihu White, although balked in his previous attempts to devise a machine caster, had prospered as a

type founder, and in 1828 he backed another inventor, William Johnson, who had been rebuffed by other manufacturers. Johnson's machine made type, but the characters were not solid.

While a European named Berte is supposed to have first applied the principle of a pump to type casting, most authorities give David Bruce, Jr., of New York credit for its practical use, at least in America. A hand pump was attached to the mould by Bruce in 1834, and in 1838 he produced a full fledged casting machine, with pump, which with minor modifications was used for many years. In modern terms, this was die casting. The old way was mould casting.

Our illustration shows a typical caster of the 1870's. The metal pot is the compartment in back. When the operator turned the crank, the rigging with the spring which you see in front and which contained the matrix, was pressed up against the nozzle in the metal pot.

The matrix carrier then backed off from the pot, the upper part of the mould (die) lifted, and a piece of type would fall down the chute. The perpendicular stick you see at the top is the upper end of the pump mechanism, which forced the metal out of the nozzle into the mould.

The operator of a machine like this could turn out in an hour as much as the man with the hand mould used to cast in a long day. The actual speed was determined by the size of the type. Small type was—and is on present day equipment too—cast faster than big type, the latter requiring more time to fill the mould.

While experiments to keep the mould cool via circulating water were carried on even before Bruce's machine was invented, no special means were used by him for cooling. Metal pots were heated by coal, later replaced by gas. Power operation was introduced in some foundries at least as early as 1870, but many machines were turned by hand well into the twentieth century, especially on large characters which required extremely slow operation. By that time blowers were often used to keep the mould cool.

The type as it was turned out by the Bruce machine was by no means finished. The jet or tang (shown in the accompanying illustration of a rough piece of type) had to be broken off. The two opposite sides of the letter body were rubbed on a stone to remove any burrs or fins. The type was then set up on a long stick so that it could be "dressed", that is, a hand tool could be run along the feet of the type where the jet had to be detached, to cut and smooth the base. Letters which overhung the body (if any) had to be kerned, or undercut, so that they would not interfere when set with other type and break off.

This, then, was the way most type was cast from 1838 until the turn of the century, both here and abroad. In spite of the speedup made by the Bruce caster over the hand mould, there was still lots of handwork involved.

The advent of the Linotype and similar slug machines eliminated the huge newspaper, book and magazine market for handset type, in the 1890's, and composing machines of one kind or another eventually took over a large segment of the job business. There remained, however and still remains, a substantial demand for handset type. Needless to say, its manufacture has progressed along with everything else in the graphic arts.

The present-day type casting machine is heated by either gas or electricity, thermostatically controlled to maintain the correct temperature for best results. The mould is water jacketed and cooled. The type comes out on a stick, jet knocked off, all dressed ready to put up in a package with the other letters of the alphabet. It produces finished type three times as fast as the old Bruce caster made the unfinished product.

The matrices from which the type is cast are about the same as they were a hundred years ago, however. And the finished product, while it may be a little better, still depends on a good type design to make the end product equal that of Caslon, Bodoni and other old users of the hand moulds.

Ships' Tackle Blocks

by WALTER P. GILLINGHAM

Just when tackle blocks were first used on shipboard is unknown, but there is little doubt that their appearance there coincided with that on land. Models of Egyptian vessels of about 1600 B.C., placed in tombs to provide departed souls with transportation in the other world, show that there were ropes on the masts for raising yardarms and that they were led through square openings in a framework of wood. That crude contrivance acted as a tackle block.

At the time of the Roman Empire, the single fixed pulley was utilized aboard ship for various purposes, among them the hoisting of large stones to the top of a battle tower, from which they were hurled at enemy craft or troops by means of a catapult.

Little is known about the structural features of early ships' tackle, but there is ample proof that it came to be an essential part of a vessel's paraphernalia. Records are in existence of the building of two warships—the

Sovereign and the *Regent*—by Henry VII of England at the close of the fifteenth century. Although each had a displacement of less than 600 tons, they were of such advanced design and armament that their launching caused a sensation.

When the *Sovereign* sailed from Portsmouth on January 29, 1510, the warrant of her voyage included the following items: "Twyne, merling (marlin), ropes, cables, lynes, tacks, lists, toppe-armers, stremers, standards, compasses, ronnyng glasses (sand-glasses for the ship's log), lanterns, shrowdes, shevers of bras (brass sheaves), poleys (pulleys), and other taclyng."

In the United States, shipbuilding started in Philadelphia soon after the arrival of William Penn who, in 1681, wrote that among those already settled in the colony on the Delaware were "Shipwrights, Carpenters, Hewers, Sawyers, Trunnel-Makers, and Joyners." By 1685 ships were being built for West Indian, English and European merchants—craft that were to become famous for their workmanship and fine material.

In 1718, one James Logan, Philadelphia shipbuilder, wrote that "Almost all the paraphernalia for a ship, such as ropes, sails, iron work, and blocks, can be procured from local craftsmen." He mentioned ropemakers, also a Stephen Beezley, blockmaker. John Reynell, another shipbuilder, listed the following items in his account book for the construction of the *Torrington* in 1728–29: "To Hugh Cordry, blockmaker, for his Bill for Blocks and &c . . . £7– 6–6. To Stephen Beezley, blockmaker, for his Bill for Blocks and &c . . . £12– 12–2." For a second vessel, the *Delaware* he paid "Simon and Stephen Beezley for Blocks and &c . . . £24– 16–2." The latter also made blocks for the *John and Anna* built by Richard Deeble in 1734.

The blocks used on shipboard were of two kinds: "made" and "morticed." The former consisted of several pieces of wood cut separately and fitted together, while the other was chiseled from a single piece. The grooved wheel was either of metal, such as iron or brass, or of wood. Blocks suspended in the rigging were usually strapped with rope or with leather thongs because they were considerably lighter than iron-bound ones and therefore did far less damage to sails through chafing.

Because early-day sailors were also craftsmen they could, with a few simple tools, fashion almost anything needed for the rigging. Ships' stores usually included quantities of extra sheaves, and any ship's carpenter could, on short notice, turn out tackle blocks comparing favorably with those made on shore. And any sailor worthy of his name could whip out his jacknife and quickly convert a piece of wood or whalebone into a temporary block.

Tackle blocks have changed little in general design throughout the years, but materials of construction differ considerably. Once wood was the principal material; now metal is largely used. Where sheaves once squeaked on wooden axles greased with animal fat, modern sheaves turn smoothly and quietly on well-lubricated bearings that reduce friction to a minimum. Today, with the exception of a few operations that involve handwork, modern machinery and labor-saving tools have converted the making of tackle blocks into a fast, efficient, and economical procedure.

Excerpt from "Tackle Blocks—Past and Present" in *Compressed Air Magazine*, June, 1949. Used by permission of the publication and Madesco Tackle Block Company, Easton, Pennsylvania.

About Our Contributors

The article on Ships' Tackle Blocks was brought to our attention by *Melvin C. Dow* of Newburgh, New York.

Glover A. Snow of The Kelsey Company, Meriden, Connecticut, manufacturers of printing presses, collects printing presses of the 18th and 19th centuries and has done research on the history of typography. He contributed an earlier article on hand presses.

Harrison Elliott of New York City, is an executive of the Stevens-Nelson Paper Corporation and much interested in the early history of paper-making in America. As a hobby he is making paper by hand at the old Onderdunk Mill on Long Island.

Rudolf P. Hommel, Richlandtown, Pennsylvania has been a member of EAIA since 1934 and on the board of directors for several terms. He is author of *China at Work*.

A frequent contributor of articles on early home and farm industries, *Jason Almus Russell*, Bloomsbury Pennsylvania collects implements used in this particular field.

Paper Industry

(continued from page 193)

Penn's new commonwealth was naturally very strong to a man of Rittenhouse's convictions. Shortly after he settled in Germantown the Mennonites chose him as their minister and later conferred on him the further honor of making him the first Mennonite bishop in America. The Mennonite church forbade preaching for pay and this service was a two-year labor of love.

Having devoted the first two years of his life in Germantown to the moral welfare of the community, in 1690 Rittenhouse with three partners erected a paper mill on a small tributary to Wissahickon Creek. His associates were Samuel Carpenter and Robert Turner, landowners and advisers of William Penn; Thomas Tresse, a rich iron monger, and William Bradford who established the first printing press in the Middle Colonies and the first newspaper in New York. Rittenhouse as a papermaker was the most important factor in the company and by 1705 was the sole proprietor.

A freshet swept away the original mill structure in 1700, a hardship which excited the sympathy of William Penn, who regarded the enterprise as a necessity to the prosperity of the commonwealth and sought aid among the settlers. Rittenhouse and his son Claus built another mill a short distance below the site of the first. This new and more substantial structure was in full operation in 1702.

It had been no small task to establish such an industry in a new country. There were certain appliances which had to be made under primitive conditions. The making of paper by hand required equipment which a scarcity of materials and lack of tools made very difficult to install. This handicap is not evident in the well-preserved sheets of this mill's product which still exist. Not only was a good and lasting paper made, but three different styles of watermarks were used, an evidence of the papermaker's pride in his product.

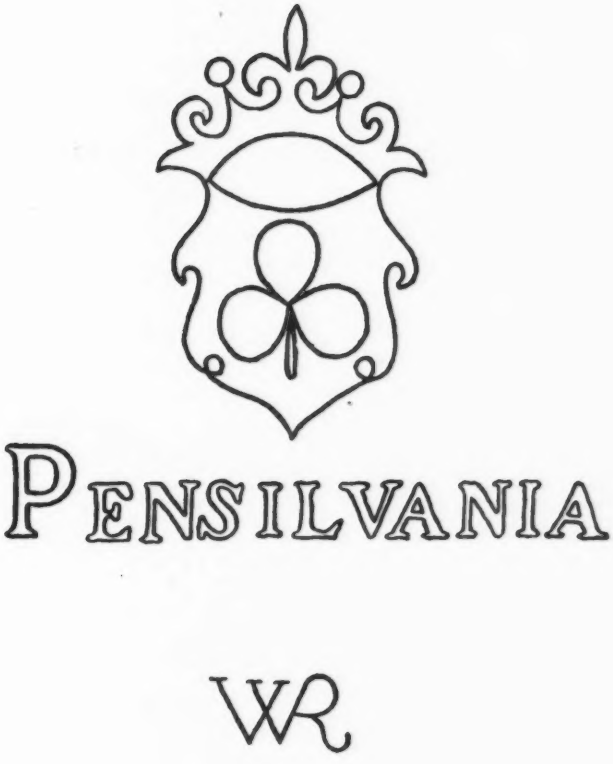
It is interesting to note that although wood was not at that time thought of as a material for papermaking, an old deed dated 1705 cites the boundary of the mill tract as "beginning at a Spruce Tree near Wissahickon Creek." Here at their door was the very material which was to work such a revolution in papermaking, while their crude stampers were noisily pulping cast-off linen rags originally woven from the first flax grown and spun nearby. That their raw material was scarce is evident from the frequent appeals in the newspaper of that day imploring the colonists to save their rags for the papermaker.

The mill made writing and printing papers originally. Some of the output was used by the Continental Congress; Benjamin Franklin took some of it for his almanacs; and the first newsprint made in America was produced here for the *American Weekly Mercury,* Pennsylvania's first newspaper. *The New York Gazette,* New York's first newspaper, was also printed on paper made in the Rittenhouse Mill.

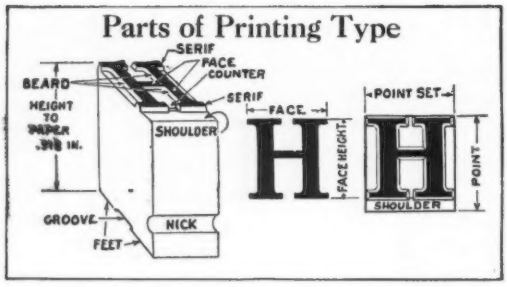
In 1706 William Rittenhouse gave three-fourths interest in the mill to his son, Claus. Thereafter the mill remained in the possesssion of various members of the Rittenhouse family until the land was acquired by the Fairmount Park Commission in 1890. Two small stone houses still stand near the mill site. The larger of these structures was erected in 1707 and was the home of William Rittenhouse and his son, Claus. Carved in a stone over one of the windows are the initials of the father and son and the date 1707. This small rather picturesque building is better known today as the birthplace of David Rittenhouse, the astronomer, a great grandson of William, the papermaker. A bronze tablet on the house commemorates that fact and that near the site was erected the first paper mill in America.

Because so many of the English settlers came to New England poorly equipped, several early writers suggested lists of tools and other equipment. William Wood, in his *New England's Prospect,* published in 1634, listed the tools and materials needed at the time he was writing:

"All manner of Ironwares, as all manner of nailes for houses . . . with Axes both broad and pitching axes. All manners of Augers, piercing bits, Whipsaws, Two-handed saws, Froes, both for the riving of Pailes and Laths, rings for Beetle heads, and Iron-wedges; though all these be made in the Countrey; (there being divers blacksmiths) yet being a heavy commodity, and taking but little stoage, it is cheaper to carry such commodities out of England. Glasse ought not to be forgotten of any that desire to benefit themselves, or the Countrey; if it be well leaded, and carefully pack't up, I know of no commodity better for portage or sayle."

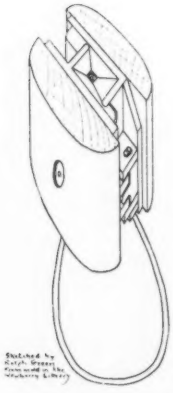


Facsimile of the watermark of Rittenhouse Paper Mill

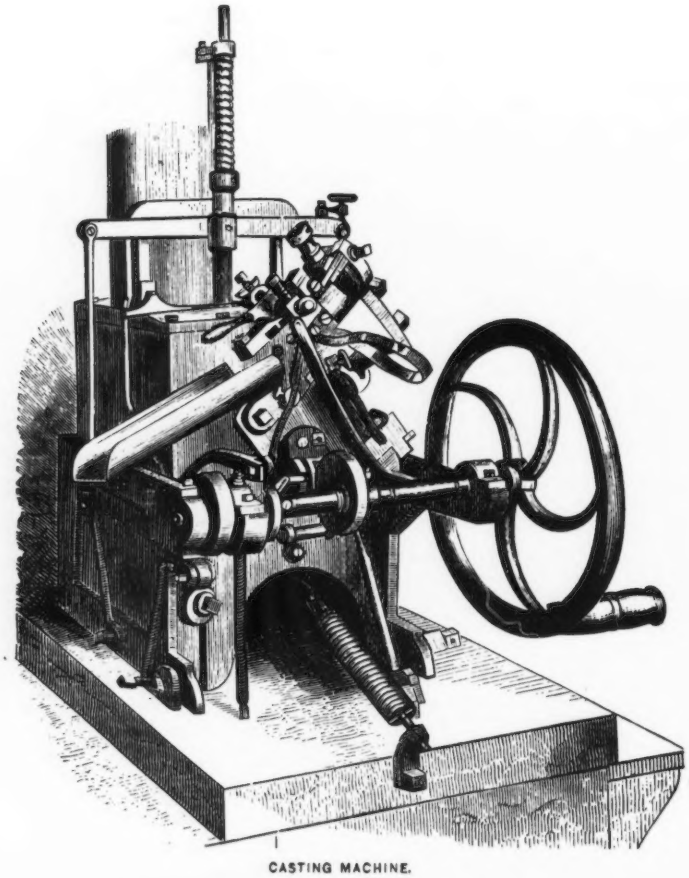


Type from an Old Caster before removal of Jet (at left). Present day machines cut this off before delivery. Groove is made when jet is cut off. See diagram of a finished piece of type.

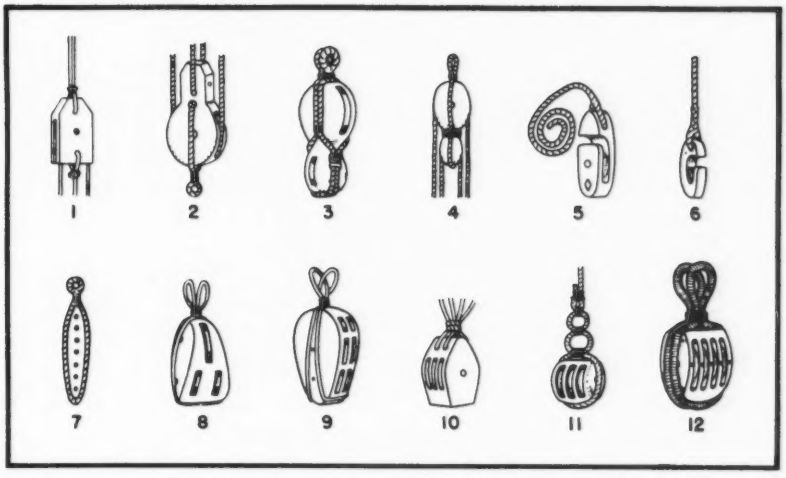
Punch Matrix (circa 1870).



A hand mould (circa 1800). Drawn by Ralph Green from a mould in the Newberry Library.



Hand-operated casting machine of the 1870's.



EARLY WOODEN BLOCKS USED ON SAILING SHIPS

Sketches from THE BOOK OF KNOTS *by Clifford W. Ashley**

1 — *Early 17th Century block that is representative of one of the earliest-known types.*

2 — *Block of the same period having two sheaves at right angles to each other. It is strapped by a rope passing through a hole between the sheaves.*

3 — *18th Century block with sheaves at right angles. It is double-strapped.*

4 — *Fiddle block with the sheaves placed one above the other to make it lie flatter against the yard or mast than if they were side by side.*

5 — *Early type snatch block.*

6 — *Swig block. It has no sheaves and resembles a snatch block.*

7. — *"Euphroe block," which had "many holes but no shivers." It was used to extend an awning or other covering.*

8 — *Threefold block of the 18th Century.*

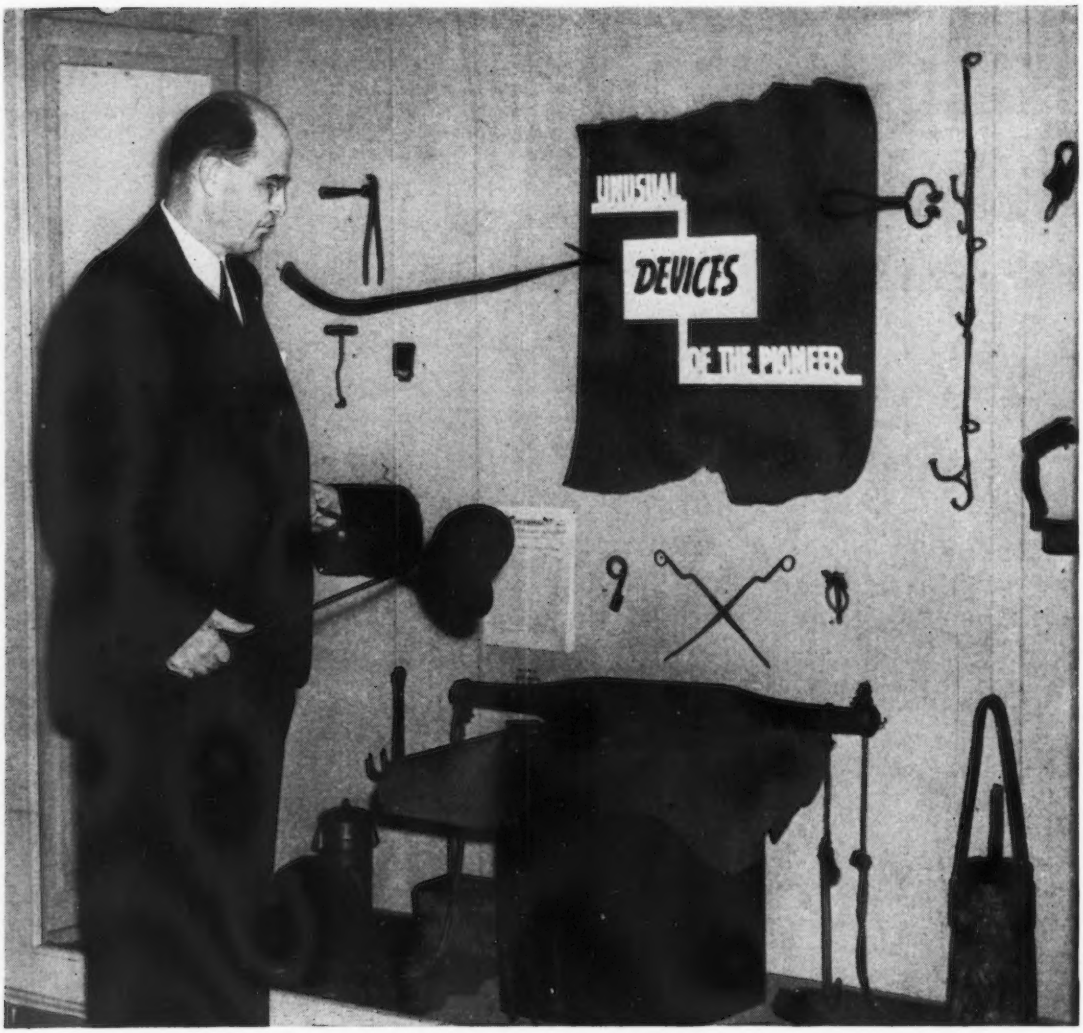
9 — *Multi-sheave block described in Crescentio's* NAUTICA MEDITERRANIA *of 1607 as the type used to distribute the strain of running rigging.*

10 — *Earliest method of strapping was to reeve the rope through a hole in the end of the shell, as shown in this sketch of a 17th Century block.*

11 — *Method of strapping a threefold block as given by Vial du Clairbois in 1787* ENCYCLOPEDIE METHODIQUE MARINE.

12 — *"Heaving-down" or "careening" block. Rigged between the mast and the shore, such blocks were used to turn a ship partly over on one side so as to expose the other for scraping, calking, and and other work.*

*Doubleday, Doran & Co., New York, 1944.



Edward Durell, president of EAIA, with a wafer iron in his hands is surveying some of the items in his exhibition of "Unusual Devices of the Pioneer" shown recently at the Ohio State Museum, Columbus, Ohio.

President's Message

To the Members of the Early American Industries Association:

I think you will agree with me that we are really getting back into our pre-war stride. The last two annual meetings—Cooperstown in 1948 and Peterborough in 1949—were excellent from every point of view but one—not enough members present.

Your President is requesting all Directors to send suggestions for the location and date of the next annual meeting, and your Board would welcome ideas on this subject from all members. Send them direct to me at 500 Dublin Avenue, Columbus 15, Ohio, for presentation to the Directors.

In selecting a meeting place, it seems to me that there are five important points to consider:

1. The location should be such that as many as possible of our members may attend with the minimum of traveling. We have a heavy concentration of members in New England, New York, Pennsylvania and New Jersey.
2. To equalize the more distant members' need to travel, the meeting should probably not be held in the vicinity of either of the last two annual meetings.
3. There must be an organization to sponsor our group; that is, arrange for meeting places and provide access to permanent exhibits in the immediate vicinity, preferably in the same town.
4. The sponsoring organization should have a capable person willing to act as Chairman of the Program Committee of the EAIA Meeting.
5. The location selected should have suitable hotel and other accommodations for those who wish to stay over night.

I know if all our members will put on their thinking caps they will come up with some very interesting suggestions and the 1950 meeting will be the best yet.

But please always bear in mind the fact that our organization is primarily interested in the collection, preservation and study of the early tools and crafts of America and our meeting place and program should be built around a location where early tools have been collected and preserved and where, if possible, they can be studied by seeing them in actual use.

Yours for the best meeting we have ever had.

EDWARD DURELL, *President*

Gathering Sawdust

by JASON ALMUS RUSSELL

My early home was in the midst of a New England lumber country. There, second-and third-growth pine forests alternated with oak, yellow birch, hard maple, and ash in a natural crop rotation. Almost every winter father hired a portable sawmill set up on some particular woodlot which had arrived at maturity. All too soon the removal of the great white pines, the feathery hemlocks, and the tufted spruces, opened up new vistas across the valley to the gently rising highlands beyond, leaving in their place a wilderness of brush, slash, and broken saplings. Such careless deforestation constituted a constant fire hazard for many years.

Prominent in the midst of this desolation a great yellow pyramid usually with a broken cone at the top, rose higher and higher with an ever broadening base. A blower (run by steam generated in an iron boiler, heated by a plentiful supply of dry resinous slabs) blew out a steady "stream" of sawdust to the ever-growing pile. This dust perfumed the air for a long distance with its pleasantly pungent pitchy odor.

After the pile had dried thoroughly on the surface, we made ready to procure our fall supply. Indeed, the local term "gather" was employed for no sensible reason except that of the native idiom.

Attached to the East barn, the sheep-"linter" had long served as our sawdust repository. Once a year at the end of the summer, we proceeded to repair the shingles, nail boards over the cracks in the weather-beaten boarded sides, tack pieces of tin cans over the frequent knotholes, and "plant-in" the broken flooring.

Our hired man went to considerable pains in nailing the side-boards on the wagon and wedging burlap bagging in between the cracks of the flooring. A goodly supply of tarred rope, bags, shovels, hoes and baskets completed our equipment.

Now the wagon bumped precariously over the rough cart-road to the distant sawdust pile. Once there, father drove the cart close to the slope of the pile for easier loading. The hired man and I shovelled the dry dust into the wagon while father filled bag after bag with which to ballast the top of the load. All day long we made trips back and forth from the homestead until the "linter" overflowed. Meanwhile our shirts and trousers were filled with the gritty particles producing a skin irritation, and we coughed incessantly from breathing the fine dust.

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The Chronicle

ffued occasionally for members of

EARLY AMERICAN INDUSTRIES ASS'N

The purpose of the association is to encourage the study and better understanding of early American industry, in the home, in the shop, on the farm, and on the sea, and especially to discover, identify, classify, preserve and exhibit obsolete tools, implements, utensils, instruments, vehicles, appliances and mechanical devices used by American craftsmen, farmers, housewives, mariners, professional men, and other workers.

EDWARD DURELL, *President*
500 Dublin Ave., Columbus, Ohio
LORING MCMILLEN, *Vice-President*
Staten Island Historical Society
Richmond, Staten Island, New York
LEWIS N. WIGGINS, *Vice-President*
Shelburne Museum, Inc.
Shelburne, Vermont
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Cooperstown, New York
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Ohio State Museum, Columbus, Ohio
MRS. FRANK D. FEIRCE, *Treasurer and Editor*
51 Paxton St., Leicester, Massachusetts

Communications regarding the *contents* of THE CHRONICLE should be addressed to the Editor; regarding *back numbers* to Loring McMillen; suggestions for *members* to any of the Officers; *all other matters* to the President. Addresses as here given.

DUES

The annual dues are payable January 1st, and are as follows: Regular members, $3.00; Supporting members, $5.00; Sustaining members, $10.00 and up. There is no distinction between classes, except the amount of dues, but THE CHRONICLE cannot be financed unless a considerable number of the members pay more than $3.00. Each member is expected to voluntarily place himself in the class which represents the amount he is willing to contribute to the support of the Association for the current year. Life membership costs $50.00. THE CHRONICLE is sent to all members without additional charge.

Editor's Comment:

We hope members will take advantage of the advertising insert. Use it for things you want to buy and items you have for sale. Reports state that advertisers have had good results.

A recent publication of the Brookline Historical Society (Massachusetts), *Some old Brookline Houses Built . . . before 1825 and still standing in 1948* was written by Nina F. Little (Mrs. Bertram K. Little) Brookline. The book is illustrated and includes Architectural and Biographical Notes.

How many members of EAIA use the old tools they collect in making things by hand? If you don't you will be inspired to try when you read Allen H. Eaton's new book, *Handicrafts of New England.**

It is a delightful book and Mr. Eaton, who is a member of the board of directors of EAIA, told us of the project when he first started with it.

He begins with a survey of the crafts and craftsmen of Plymouth in the first years of the Colony, and moves swiftly up to date, noting especially the resurgence of interest which started at the turn of the Century.

Nearly every craft seems to be included and Mr. Eaton writes about the handicrafters themselves, mentioning them by name. We discovered a number who are members of EAIA.

There are spinners and weavers, quilters, whittlers, bird carvers, net makers, basket makers, metal workers, those skilled in the nautical crafts and such miscellany as tombstones, weathervanes and flytying.

Specialties of each New England state are indicated, and one section of the book gives information on the Arts and Crafts Societies of the United States, with details of the League of New Hampshire Arts and Crafts and other New England groups.

Most readers will like not only the text but the illustrations. There are 128 superb black and white photographs of native craftsmen at work and four color prints.

Mr. Eaton points out that we can all become craftsmen and states: "Our people are now earnestly concerned with the contribution of handicrafts to both local and national culture. We are coming to realize that culture is not only what a people's leaders think and say and do, but what people in general think and say and do. To believe that everyone in our democracy counts and to encourage each to make his best contribution is to give special significance to handicrafts because here is by far the largest field of artistic expression in the visual arts, and here countless persons throughout America, hitherto unknown, are making modest, skillful, original and often beautiful things which reflect their mental world and the elements of their environment."

The book should be an incentive to EAIA to go on with the project of interesting young people in the use of tools and knowledge of the early handicrafts.

*Published by Harper & Brothers, New York. $5.

Early American Industries

Membership

It is with deep regret that we record the passing of Eleanor Hudson Welch. One of the early members of EAIA, she was always interested in, and enthusiastic about its activities. While chairman of the recruiting committee, she was instrumental in adding many members.

Membership lists should be amended as follows:

(Cor) indicates correction
(Ch) indicates change of address
(D) indicates decease
(N) indicates new member

CALIFORNIA

Altadena: St. John, Roscoe D., 535 East Sacramento Street (1551) (Ch)

Coronado: Douglas, Mrs. John S., 875 Alameda Boulevard (1553) (Cor)

DISTRICT OF COLUMBIA

Washington: Rath, Frederick L., Jr., 511 - 10th Street, N. W. (1562) (N)

ILLINOIS

Homewood: Van Sickel, R. C., 18154 Highland Avenue (1563) (N)

MAINE

North Vassalboro: Jette, E. M., R.F.D. No. 1 (1541) (Cor)

MASSACHUSETTS

Still River: Welch, Mrs. Austin H., (Eleanor Hudson) (42) (D)

NEW JERSEY

Trenton: Wilber, Charles P., N. J. Dept of Conservation and Economic Development (1561) (N)

SOUTH CAROLINA

Westminster: Mason, W. Otis, 207 Windsor Street (1560) (N)

VIRGINIA

Arlington: Legg, James E., 2234 N. Lexington Street (1565) (N)

WISCONSIN

Cuba City: Wimmer, W. G., (1564) (N)

Excavation Indicators

by RUDOLF HOMMEL

If a working man is told to dig away a sloping bank, it must be in his interest to maintain and prove how high the bank was at the edge where he started digging. In order to have such "witnesses" of his work, the Chinese workman leaves at set intervals conical columns of the original soil standing, which serve as indicators from which the amount of the excavated material can be calculated. Any argument about the original contour of the excavated area can be easily settled by reference to the columns which have been left standing.

A letter of Fenelon* shows that in the seventeenth century the custom of leaving such indicators was prevalent. Fenelon writes:

"On territory where masses of ground are to be removed, pieces of ground are left which are called 'temoins' (witnesses) to show by these remnants, the depth of excavating done by the hand of man."

The language of workingmen in France has given these indicators also the name of "dames."

A correspondent of Notes & Queries (1928, cliv, 393) relates that in the Belgian Ardennes the old custom of leaving "temoines", although in a somewhat different sense, is still in use now. "When a wood is being cut down, one leaves usually five or six trees only as a remembrance, and to show the state to which they may have come. There is no other known reason of this custom." This may be so, yet the custom is remindful of a German forestry law which requires that in cutting down any wooded area a few trees must be left standing for seed propagation.

In England, the custom of leaving excavation indicators is likewise known. A French-German-English Technological Dictionary (Wiesbaden, 1887) records their name as "oldman."

The Germans also used this method of calculating excavations and called the blocks of earth undisturbed, variously: "Papen," "Pfaffen," or "Erdkegel."

In our modern times with modern methods of excavation with steam shovels, or bull-dozers there is scarcely place for these early aids for calculating man's tedious work with pick and shovel, and it seems worth recording their former use in continental Europe, England and in far-away China. Did we have any similar customs in former times?

*Notes & Queries (London, England), 1928, cliv, 334.

Communications

From F. M. Knowles, Dover Plains, N. Y.

"In re. the funny looking bench on the last page of the December CHRONICLE, here is what I have been able to dig up.

"My 84-year old carpenter-blacksmith friend George H. Brown tells me it is a Shaving Bench originally used for shaving barrel hoops. They used to cut branches of oak or hickory and sometimes black ash and clamping one end into the Shaving Bench work the wood down to hoop size with a draw shave. All he ever saw were double end and could be used from either end.

"The wood was placed along side of the top of the longitudinal piece and held there by the woodpecker-looking dingus at the top which was tightened by the feet of the workman acting on the block at the bottom. All he ever saw in this part of the country had two cross sticks at the bottom for the feet and an eccentric or cam of 4-inch wood at the top, which, when turned by the foot motion jammed the wood tight and made it possible for the workman to shave it, the end of the piece going over his shoulder.

"Years ago when nearly all barrel hoops were wood such a device would be found in practically every carpenter's shop and on many farms. And the old-fashioned hickory hoop made and notched together at the ends on one of these Benches would outlast any of the modern hoops which rust out in a few years. I remember when all potato barrels were so hooped and the sugar barrels had flat hoops made much the same way. The Bench could be used for making splats, also."

From Miner J. Cooper, Windsor, New York

"The contraption illustrated by I. Warshaw on page 192 of the December, 1949 CHRONICLE is principally a shinglehorse. These horses were used for many other draw knife operations in which the work was held by a clamp. Some of the clamping heads on these were of different forms, particularly suited to the work involved. Those used by barrelmakers had notches at the sides of the head to hold staves for edging."

Charles M. Perry, Greene, Rhode Island wants any information on the early New England manufacture of iron plows. He writes: "I find that iron plows were made here in Rhode Island as early as 1826 and were made in Providence in the 1850's."

The only literature he has is a pamphlet of the U. S. Dept. Agr. Soils and Agr. Engineering, Farm Machinery, published in 1935 on the *History of the Plow.* However, it does not touch upon New England manufacture of the plow.—ED.

Gathering Sawdust

(continued from page 201)

In the meantime, "neighbor children" who had ridden out with us in the empty wagon, amused one another by climbing up to the top of the pile, then running swiftly down the steepest part of the cone.

Dry sawdust was useful for many purposes. In the late fall father banked the base of the house and barn with it, taking care to cover this deep layer of home-discovered insulation with pine, hemlock or spruce boughs, primarily weighting it down to prevent the light "dust" from blowing away, but also for artistic reasons.

In addition, sawdust was the material used in the hollow shell-like partitions which insulated the ice-house. Sawdust also covered its earthern floor, and filled the chinks between the layers of ice. With dry sawdust we bedded down the cattle before spreading a protecting layer of meadow hay on top of it. In wet sawdust we buried wet scions from the various apple and pear trees against the spring grafting. Grandmother even sifted the dust, using the fine powder to fill rag dolls and pin cushions. These were but a few of sawdust's multifold uses.

Today, the casual motorist, the hunter, the country lad—all see nothing romantic in the sawdust heap, disfiguring the landscape, amidst the slash of a ruined woodlot. My father and grandfather however, valued such a pile gleaming golden in the sun, for its many uses around the farmstead in that thrifty period when nothing was allowed to go to waste.

Such was an early American Home Industry.